A Comparison of Self-Documentation in Diabetics: Electronic Versus Paper Diaries

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Abstract: Attention needs to be given to how patients can capitalize on the benefits of Personal Digital Assistant technology. The specific aims of this pilot study are to compare the efficacy of diabetic patients documenting their health maintenance data (i.e. blood glucose levels, meal intake, and exercise) using an electronic patient diary (ED) versus a traditional pen and paper (PD) diary; and determine participants' satisfaction with each diary approach.

In 1993, the Diabetes Control and Complications Trial (DCCT) showed a relationship between tight control of blood glucose levels and a reduced risk of developing microvascular complications among Type 1 diabetics.[1] In the 1998 United Kingdom Prospective Diabetes Study (UKPDS), researchers found similar effects in Type 2 diabetics. For every percentage point decrease in a patient's glycosylated hemoglobin, or hemoglobin A1c (HbA1C), they found a 35% reduction in microvascular complications.[2] These findings strongly support that appropriate glycemic control leads to better patient outcomes as well as potential cost savings by avoiding the long-term complications that result from diabetes. The ability to maintain such desired glycemic control is heavily dependent upon a joint effort between the patient and the health care provider. One of the most important tools that can be used by both providers and patients is the patient diary. The hypothesis is that more accurate documentation of health maintenance data will be seen with electronic diaries than with paper diaries.

This pilot study will be conducted using an experimental design where patients will be randomly assigned to collect health maintenance data using either a pen and paper diary (PD) or electronic diary (ED). A convenience sample of ten Type 1 or 2 diabetic patients will be recruited at Madigan Army Medical Center (MAMC), Tacoma, Washington.

Participants will be included if they are between 18 and 65 years of age, have been diagnosed with diabetes for at least 6 months, and are eligible for care at MAMC. Participants will be excluded if they have impaired vision, utilize an insulin pump, don't speak English, will leave/be away from the Ft. Lewis area during the two months following enrollment in the study, or are physically unable to write or use a PDA.

Participants will be interviewed in person to obtain written informed consent, and to be oriented to the study procedures. When the initial interview is arranged, potential participants will be instructed to bring their current diabetic diary with them for baseline data collection. If the patient has not been recording their health data this will be documented. Following consent, participants will be randomly assigned to start with either the PD or ED, and given instruction on how to use the assigned diary. This initial meeting will be followed by four weeks of daily recording. Both ED and PD data will be collected from participants at the end of the four weeks of recording. At this time participants will also be asked to answer a short questionnaire that describes their satisfaction with the PD or ED.

The efficacy of documentation will be quantified as the number of daily entries over a four-week period for blood glucose levels, meal intake, and exercise activity compared to the number expected. The results of this analysis will be described (e.g., median, high, low). Participant's satisfaction with each of the diary approaches will also be described.

References

1. The Diabetes Control and Complications Trial Research Group. The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. NEJM 1993; 329: 977-986.
2. UKPDS Group. UK prospective diabetes study group: intensive blood glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes. BMJ 1998; 317: 703-713.